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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/747,603	12/29/2003	Seung Jong Yoo	20063/10018	6474
34431	7590	06/27/2005	EXAMINER	
HANLEY, FLIGHT & ZIMMERMAN, LLC 20 N. WACKER DRIVE SUITE 4220 CHICAGO, IL 60606			CHAUDHARI, CHANDRA P	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/747,603

Applicant(s)

YOO, SEUNG JONG

Examiner

Chandra Chaudhari

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date March 26, 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art.

Applicants' admitted prior art Fig. 1 and pages 1-2 in the specification discloses the claimed invention in forming a bonding pad by forming a 1st insulating layer 12, top metal interconnect 14 in the trench, 2nd insulating layer 16, contact hole exposing a portion of the top metal interconnect, metal pad 18 is formed, a 3rd insulating layer 20 as a passivation layer, and exposing the metal pad on the 2nd insulating layer by removing some part of the 3rd insulating layer.

Claims 1, 3-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu – US 6,358,831.

Liu (Figs. 5A-6D and text in col. 5, line 31 to col. 6, line 63) discloses the claimed invention in forming a bonding pad by forming 1st insulating oxide layer 134, top metal interconnect 54 in the

trench, 2nd insulating oxide layer 56, contact hole exposing a portion of the top metal interconnect, metal pad 58 is formed, a 3rd insulating passivation layer 62, and exposing the metal pad.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art and Sun – US 6,245,380.

Applicants' admitted prior art is applied as above and does not disclose the copper formed by electroless plating or electroplating, nor what the 1st, 2nd, and 3rd insulating layers are. Sun (Figs. 2-5 and text in col. 2, line 54 to col. 3, line 32) teaches during forming a bonding pad that the metal layer of copper 210 may be formed in various processes including electroless plating or electroplating, and that the 3rd insulating passivation layer may be chosen among a variety of materials including nitride.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the copper by electroless plating or electroplating as taught by Sun in applicants' admitted prior art process as being conventional to efficiently and properly fill the copper in the trench. The 3rd insulating layer being nitride may be chosen from various art recognized equivalent insulating layers for properly isolating and protecting the device. It is reasonable to one of ordinary skill in the art that the 1st and 2nd insulating layers be SiO₂ or other dielectrics to properly isolate the device layers and structures.

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Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu and Sun – US 6,245,380.

Liu is applied as above and does not disclose the copper formed by electroless plating or electroplating. Sun (Figs. 2-5 and text in col. 2, line 54 to col. 3, line 32) teaches during forming a bonding pad that the metal layer of copper 210 may be formed in various processes including electroless plating or electroplating.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the copper by electroless plating or electroplating as taught by Sun in Liu's process as being conventional to efficiently and properly fill the copper in the trench.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chandra Chaudhari whose telephone number is 571-272-1688. The examiner can normally be reached on Mon - Fri (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C. Chaudhari

Chandra Chaudhari
June 21, 2005

Chandra Chaudhari
Primary Examiner
Art Unit 2891